



Determine vertical displacement of a sinusoidal function

1

Using the mapping notation, which variable and value produce this transformation?

$$g(x) = a f(b(x-h)) + k$$
$$(x, y) \mapsto \left(\frac{x}{b} + h, ay + k\right)$$

shift right by 3

A $h = -3$

B $h = 3$

C $a = 3$

D $a = -3$

2

Which sinusoidal function has these parameters?

$$\begin{aligned}\text{Amplitude} &= \frac{5}{11} \\ \text{Period} &= \frac{14\pi}{5} \\ \text{Vertical Shift} &= 2\end{aligned}$$

A

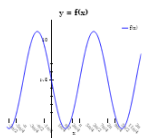
$$f(x) = -\frac{5}{11} \cos\left(\frac{5}{7}x\right) + 2$$

B

$$f(x) = \frac{5}{7} \cos\left(-\frac{5}{11}x\right) + 2$$

3

Which function would have a graph with this vertical shift?



A $f(x) = -6 \sin(x) - 1$

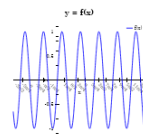
B $f(x) = -6 \sin(x) + 2$

C $f(x) = -6 \sin(x) + 5$

D $f(x) = -6 \sin(x) - 3$

4

Which function would have a graph with this period?



A

$$f(x) = \cos(5x)$$

B

$$f(x) = \cos(x)$$

C

$$f(x) = \cos(3x)$$

D

$$f(x) = \cos(6x)$$

5

What are the vertical shift and amplitude of this sinusoidal function?

$$f(x) = -\frac{4}{7} \cos(x) + \frac{7}{2}$$

A

$$\begin{aligned}\text{Amplitude} &= \frac{4}{7} \\ \text{Vertical Shift} &= \frac{7}{2}\end{aligned}$$

B

$$\begin{aligned}\text{Amplitude} &= \frac{7}{2} \\ \text{Vertical Shift} &= -\frac{4}{7}\end{aligned}$$

**Determine vertical displacement of a sinusoidal function**

- 6** What are the phase shift, period, and vertical shift of this sinusoidal function?

$$f(x) = \sin\left(\frac{7}{5}\pi x + \frac{4}{3}\right) + \frac{4}{7}$$

A

$$\text{Period} = \frac{10\pi}{7}$$

$$\text{Phase Shift} = \frac{4}{3} \text{ left}$$

$$\text{Vertical Shift} = \frac{4}{7}$$

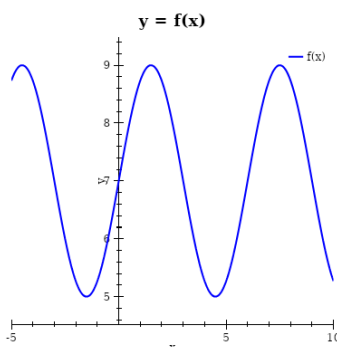
B

$$\text{Period} = \frac{10}{7}$$

$$\text{Phase Shift} = \frac{4}{3} \text{ left}$$

$$\text{Vertical Shift} = \frac{4}{7}$$

- 7** Which function would have a graph with this vertical shift?



A

$$f(x) = 2\sin\left(\frac{1}{3}\pi x + 6\pi\right) + 7$$

B

$$f(x) = 2\sin\left(\frac{1}{3}\pi x + 6\pi\right) + 1$$

C

$$f(x) = 2\sin\left(\frac{1}{3}\pi x + 6\pi\right) - 4$$

D

$$f(x) = 2\sin\left(\frac{1}{3}\pi x + 6\pi\right) + 2$$

**Determine vertical displacement of a sinusoidal function****8**

What are the phase shift, vertical shift, amplitude, and period of this sinusoidal function?

$$f(x) = -2\sin\left(\frac{6}{5}\pi x + \frac{4}{3}\right) + \frac{6}{7}$$

A

Amplitude = 2

Period = $\frac{10}{6}$

Phase Shift = $\frac{4}{3}$ left

Vertical Shift = $\frac{6}{7}$

B

Amplitude = 2

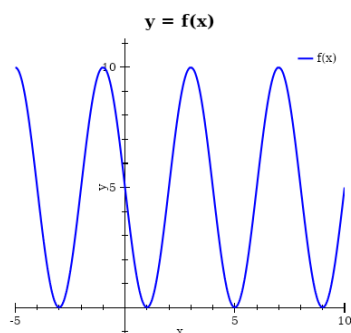
Period = $\frac{14}{6}$

Phase Shift = $\frac{4}{3}$ left

Vertical Shift = $\frac{6}{5}$

9

Which function would have a graph with this period?



A

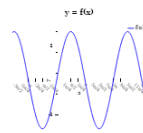
$$f(x) = -5\sin\left(\frac{3}{2}\pi x\right) + 5$$

B

$$f(x) = -5\sin\left(\frac{1}{2}\pi x\right) + 5$$

10

Which function would have a graph with this amplitude?



A $f(x) = -2\sin(x + 6\pi)$

B $f(x) = -1\sin(x + 6\pi)$

C $f(x) = 2\sin(x + 6\pi)$

D $f(x) = 7\sin(x + 6\pi)$